

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE

THE TRUSTEES OF COLUMBIA )  
UNIVERSITY IN THE CITY OF NEW )  
YORK, )  
 )  
Plaintiff, )  
 )  
 )  
v. ) C.A. No. \_\_\_\_\_  
 )  
ILLUMINA, INC., )  
 )  
Defendant. )

# **COMPLAINT FOR PATENT INFRINGEMENT**

Plaintiff The Trustees of Columbia University in the City of New York (“Columbia University” or “Plaintiff”), as and for its Complaint against Illumina, Inc. (“Illumina”), alleges as follows:

## THE PARTIES

1. Columbia University is one of the world's leading institutions of higher education, located at 535 West 116th Street, New York, New York 10027. It is a non-profit educational corporation formed by special act of the Legislature of the State of New York.

2. Upon information and belief, Illumina is a Delaware corporation having its principal place of business at 5200 Research Place, San Diego, California 92122.

## **JURISDICTION AND VENUE**

3. This action arises under the patent laws of the United States of America, 35 U.S.C. §§ 1 *et seq.*

4. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331 and 1338(a).

5. This Court has personal jurisdiction over Illumina because Illumina is incorporated in the State of Delaware, and has purposely availed itself of the privilege of conducting activities within this district. Illumina is also subject to general personal jurisdiction in this district because, upon information and belief, Illumina regularly and systematically conducts business in Delaware, including, *inter alia*, through its ongoing sales of products and services to customers located in the State of Delaware. Upon information and belief, Illumina has been a defendant in other actions in this district and has not contested personal jurisdiction.

6. Venue is proper in this judicial district pursuant to 28 U.S.C. §§ 1391(b) and (c), and 28 U.S.C. § 1400(b).

**CLAIM FOR RELIEF – PATENT INFRINGEMENT**

7. United States Patent No. 7,635,578 (“the ’578 Patent”) (attached as Exhibit A), titled “Massive Parallel Method for Decoding DNA and RNA”, issued on December 22, 2009, in the name of inventors Jingyue Ju, Zengmin Li, John Robert Edwards, and Yasuhiro Itagaki.

8. United States Patent No. 7,713,698 (“the ’698 Patent”) (attached as Exhibit B), titled “Massive Parallel Method for Decoding DNA and RNA”, issued on May 11, 2010, in the name of inventors Jingyue Ju, Zengmin Li, John Robert Edwards, and Yasuhiro Itagaki.

9. United States Patent No. 7,790,869 (“the ’0869 Patent”) (attached as Exhibit C), titled “Massive Parallel Method for Decoding DNA and RNA”, issued on September 7, 2010, in the name of inventors Jingyue Ju, Zengmin Li, John Robert Edwards, and Yasuhiro Itagaki.

10. United States Patent No. 7,883,869 ("the '3869 Patent") (attached as Exhibit D), titled "Four-Color DNA Sequencing by Synthesis Using Cleavable Fluorescent Nucleotide Reversible Terminators", issued on February 8, 2011, in the name of inventors Jingyue Ju, Dae Hyun Kim, Lanrong Bi, Qinglin Meng, and Xiaoxu Li.

11. United States Patent No. 8,088,575 ("the '575 Patent") (attached as Exhibit E), titled "Massive Parallel Method for Decoding DNA and RNA", issued on January 3, 2012, in the name of inventors Jingyue Ju, Zengmin Li, John Robert Edwards, and Yasuhiro Itagaki.

12. Hereinafter, the '578 Patent, '698 Patent, '0869 Patent, '3869 Patent, and '575 Patent are referred to collectively as "the Ju Patents."

13. Columbia University is the assignee of all right, title, and interest in and to the Ju Patents.

14. The Ju Patents cover next-generation sequencing ("NGS") technologies that allow the rapid and precise sequencing of DNA. In particular, the Ju Patents disclose and claim a type of NGS technology called "sequencing by synthesis". NGS technologies are used in a variety of medical and research applications, including identifying genes and polymorphisms associated with disease and with individual variability in drug response, and are important to ongoing genomics research and discovery, particularly in the emerging field of personalized medicine, which seeks to use a patient's own genomic DNA sequence information as the basis for individualized healthcare.

15. Upon information and belief, Illumina has manufactured, used, offered for sale, sold and/or imported into the United States, and/or manufactures, uses, offers for sale, sells and/or imports into the United States, and/or will manufacture, use, offer for sale, sell and/or

import into the United States, instruments (“NGS Instruments”), kits and reagents (“NGS Kits and Reagents”), and services (“NGS Services”) (collectively, “NGS Products”) that use the NGS technologies disclosed and claimed in the Ju Patents.

16. Upon information and belief, Illumina has offered for sale and sold, and/or offers for sale and sells and/or will offer for sale and sell, its NGS Products, directly or indirectly, to various users, including, but not limited to, the Illumina Certified Service Providers and Illumina Core Labs (collectively, “Illumina’s Customers”) listed on Illumina’s website (see Exhibit F hereto), and other genome centers, academic and individual researchers, corporations and clinical laboratories, who have used, use and/or will use the NGS Products to perform DNA sequencing.

17. Upon information and belief, Illumina has included, includes and/or will include with its NGS Products, instructions for their use in performing DNA sequencing.

18. Illumina’s NGS Instruments include, but are not limited to, the HiSeq 2500/1500, HiSeq 2000/1000, Genome Analyzer IIx, MiSeq Personal Sequencer, and HiScanSQ products.

19. Illumina’s NGS Kits and Reagents include, but are not limited to, the TruSeq SBS Kit v3-HS, TruSeq SBS Kit v5-GA, and MiSeq Reagent Kit products.

20. Illumina’s NGS Services include, but are not limited to, the Illumina Genome Network, Illumina Certified Service Provider (CSPro) Program, and the Individual Genome Sequencing (IGS) services.

21. Upon information and belief, beginning in or about 2009 and continuing to date, Illumina became aware of one or more of the patent applications that matured into the Ju

Patents and one or more of the Ju Patents during due diligence investigations of those applications and Patents.

22. Upon information and belief, Illumina had knowledge of one or more of the Ju Patents prior to commencing or continuing the commercialization of one or more of its NGS Products and/or has continued commercializing its NGS products after gaining knowledge of one or more of the Ju Patents.

**COUNT 1**  
**Infringement Of U.S. Patent No. 7,635,578**

23. Plaintiff incorporates herein by reference the allegations set forth in paragraphs 1-22 above.

24. Illumina has infringed, is infringing and/or will infringe, literally and/or under the doctrine of equivalents, one or more claims of the '578 Patent by manufacturing, using, offering for sale, selling and/or importing into the United States its NGS Products.

25. Users of Illumina's NGS Products, including but not limited to Illumina's Customers, have infringed, are infringing and/or will infringe, literally and/or under the doctrine of equivalents, one or more claims of the '578 Patent by using those products to perform DNA sequencing.

26. Illumina has actively induced, is actively inducing and/or will actively induce, infringement, literally and/or under the doctrine of equivalents, of one or more claims of the '578 Patent, by offering for sale and selling its NGS Products and providing use instructions to users, including but not limited to Illumina's Customers, intending that those users use the NGS products in a manner that infringes one or more claims of the '578 Patent.

27. Illumina has contributed to, is contributing to and/or will contribute to, infringement, literally and/or under the doctrine of equivalents, of one or more claims of the '578

Patent, by offering for sale and selling its NGS Products to users, including but not limited to Illumina's Customers, knowing that its NGS Products have been especially made or adapted for use in an infringing manner, as evidenced by the '578 Patent's written description and the NGS Products' instructions for use.

28. Each of Illumina's NGS Products constitutes or includes one or more material parts of the claimed inventions of the Ju Patents, and is not a staple article or commodity of commerce suitable for substantial noninfringing use.

29. Upon information and belief, Illumina's infringement of the '578 Patent has been and will continue to be willful, justifying an award to Columbia University of increased damages under 35 U.S.C. § 284, and attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

**COUNT 2**  
**Infringement Of U.S. Patent No. 7,713,698**

30. Plaintiff incorporates herein by reference the allegations set forth in paragraphs 1-22 above.

31. Illumina has infringed, is infringing and/or will infringe, literally and/or under the doctrine of equivalents, one or more claims of the '698 Patent by manufacturing, using, offering for sale, selling and/or importing into the United States its NGS Products.

32. Users of Illumina's NGS Products, including but not limited to Illumina's Customers, have infringed, are infringing and/or will infringe, literally and/or under the doctrine of equivalents, one or more claims of the '698 Patent by using those products to perform DNA sequencing.

33. Illumina has actively induced, is actively inducing and/or will actively induce, infringement, literally and/or under the doctrine of equivalents, of one or more claims of

the '698 Patent, by offering for sale and selling its NGS Products and providing use instructions to users, including but not limited to Illumina's Customers, intending that those users use the NGS products in a manner that infringes one or more claims of the '698 Patent.

34. Illumina has contributed to, is contributing to and/or will contribute to, infringement, literally and/or under the doctrine of equivalents, of one or more claims of the '698 Patent, by offering for sale and selling its NGS Products to users, including but not limited to Illumina's Customers, knowing that its NGS Products have been especially made or adapted for use in an infringing manner, as evidenced by the '698 Patent's written description and the NGS Products' instructions for use.

35. Each of Illumina's NGS Products constitutes or includes one or more material parts of the claimed inventions of the Ju Patents, and is not a staple article or commodity of commerce suitable for substantial noninfringing use.

36. Upon information and belief, Illumina's infringement of the '698 Patent has been and will continue to be willful, justifying an award to Columbia University of increased damages under 35 U.S.C. § 284, and attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

**COUNT 3**  
**Infringement Of U.S. Patent No. 7,790,869**

37. Plaintiff incorporates herein by reference the allegations set forth in paragraphs 1-22 above.

38. Illumina has infringed, is infringing and/or will infringe, literally and/or under the doctrine of equivalents, one or more claims of the '0869 Patent by manufacturing, using, offering for sale, selling and/or importing into the United States its NGS Products.

39. Users of Illumina's NGS Products, including but not limited to Illumina's Customers, have infringed, are infringing and/or will infringe, literally and/or under the doctrine of equivalents, one or more claims of the '0869 Patent by using those products to perform DNA sequencing.

40. Illumina has actively induced, is actively inducing and/or will actively induce, infringement, literally and/or under the doctrine of equivalents, of one or more claims of the '0869 Patent, by offering for sale and selling its NGS Products and providing use instructions to users, including but not limited to Illumina's Customers, intending that those users use the NGS products in a manner that infringes one or more claims of the '0869 Patent.

41. Illumina has contributed to, is contributing to and/or will contribute to, infringement, literally and/or under the doctrine of equivalents, of one or more claims of the '0869 Patent, by offering for sale and selling its NGS Products to users, including but not limited to Illumina's Customers, knowing that its NGS Products have been especially made or adapted for use in an infringing manner, as evidenced by the '0869 Patent's written description and the NGS Products' instructions for use.

42. Each of Illumina's NGS Products constitutes or includes one or more material parts of the claimed inventions of the Ju Patents, and is not a staple article or commodity of commerce suitable for substantial noninfringing use.

43. Upon information and belief, Illumina's infringement of the '0869 Patent has been and will continue to be willful, justifying an award to Columbia University of increased damages under 35 U.S.C. § 284, and attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

**COUNT 4**  
**Infringement Of U.S. Patent No. 7,883,869**

44. Plaintiff incorporates herein by reference the allegations set forth in paragraphs 1-22 above.

45. Illumina has infringed, is infringing and/or will infringe, literally and/or under the doctrine of equivalents, one or more claims of the '3869 Patent by manufacturing, using, offering for sale, selling and/or importing into the United States its NGS Products.

46. Users of Illumina's NGS Products, including but not limited to Illumina's Customers, have infringed, are infringing and/or will infringe, literally and/or under the doctrine of equivalents, one or more claims of the '3869 Patent by using those products to perform DNA sequencing.

47. Illumina has actively induced, is actively inducing and/or will actively induce, infringement, literally and/or under the doctrine of equivalents, of one or more claims of the '3869 Patent, by offering for sale and selling its NGS Products and providing use instructions to users, including but not limited to Illumina's Customers, intending that those users use the NGS products in a manner that infringes one or more claims of the '3869 Patent.

48. Illumina has contributed to, is contributing to and/or will contribute to, infringement, literally and/or under the doctrine of equivalents, of one or more claims of the '3869 Patent, by offering for sale and selling its NGS Products to users, including but not limited to Illumina's Customers, knowing that its NGS Products have been especially made or adapted for use in an infringing manner, as evidenced by the '3869 Patent's written description and the NGS Products' instructions for use.

49. Each of Illumina's NGS Products constitutes or includes one or more material parts of the claimed inventions of the Ju Patents, and is not a staple article or commodity of commerce suitable for substantial noninfringing use.

50. Upon information and belief, Illumina's infringement of the '3869 Patent has been and will continue to be willful, justifying an award to Columbia University of increased damages under 35 U.S.C. § 284, and attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

**COUNT 5**  
**Infringement Of U.S. Patent No. 8,088,575**

51. Plaintiff incorporates herein by reference the allegations set forth in paragraphs 1-22 above.

52. Illumina has infringed, is infringing and/or will infringe, literally and/or under the doctrine of equivalents, one or more claims of the '575 Patent by manufacturing, using, offering for sale, selling and/or importing into the United States its NGS Products.

53. Users of Illumina's NGS Products, including but not limited to Illumina's Customers, have infringed, are infringing and/or will infringe, literally and/or under the doctrine of equivalents, one or more claims of the '575 Patent by using those products to perform DNA sequencing.

54. Illumina has actively induced, is actively inducing and/or will actively induce, infringement, literally and/or under the doctrine of equivalents, of one or more claims of the '575 Patent, by offering for sale and selling its NGS Products and providing use instructions to users, including but not limited to Illumina's Customers, intending that those users use the NGS products in a manner that infringes one or more claims of the '575 Patent.

55. Illumina has contributed to, is contributing to and/or will contribute to, infringement, literally and/or under the doctrine of equivalents, of one or more claims of the '575 Patent, by offering for sale and selling its NGS Products to users, including but not limited to Illumina's Customers, knowing that its NGS Products have been especially made or adapted for use in an infringing manner, as evidenced by the '575 Patent's written description and the NGS Products' instructions for use.

56. Each of Illumina's NGS Products constitutes or includes one or more material parts of the claimed inventions of the Ju Patents, and is not a staple article or commodity of commerce suitable for substantial noninfringing use.

57. Upon information and belief, Illumina's infringement of the '575 Patent has been and will continue to be willful, justifying an award to Columbia University of increased damages under 35 U.S.C. § 284, and attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

**PRAYER FOR RELIEF**

WHEREFORE, Plaintiff respectfully requests:

- A. A Judgment that Illumina has directly infringed, is directly infringing, and/or will directly infringe, one or more claims of the Ju Patents;
- B. A Judgment that Illumina has actively induced, is actively inducing, and/or will actively induce, infringement of one or more claims of the Ju Patents by users of Illumina's NGS Products;
- C. A Judgment that Illumina has contributed to, is contributing to, and/or will contribute to, infringement of one or more claims of the Ju Patents by users of Illumina's NGS Products;

D. A Judgment that Illumina's infringement of one or more claims of the Ju Patents was and/or is willful and deliberate;

E. An Order pursuant to 35 U.S.C. § 283, preliminarily and permanently enjoining Illumina and its officers, agents, attorneys, employees, parents, subsidiaries, affiliates, successors, assignees, licensees, and those acting in privity or concert with them, from engaging in the commercial manufacture, use, offer to sell, or sale within the United States, or importation into the United States of Illumina's infringing products and/or services;

F. An award of damages pursuant to 35 U.S.C. § 284 sufficient to compensate Plaintiff for Illumina's infringement of one or more claims of the Ju Patents, but in no event less than a reasonable royalty for such infringement, together with interest and costs as fixed by the Court;

G. That such damages be increased up to three times the amount found or assessed because of the willful nature of Illumina's infringement of one or more claims of the Ju Patents;

H. A declaration that this case is exceptional within the meaning of 35 U.S.C. § 285, and an award of reasonable attorney fees, expenses, and disbursements incurred by Plaintiff in connection with this action;

I. An award of Plaintiff's costs and expenses for this action, pre- and post-judgment interest on any money damages award, and any other charges to the maximum extent permitted; and

J. Such other and further relief as the Court may deem just and proper.

MORRIS, NICHOLS, ARSHT & TUNNELL LLP



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